

REMARKS

This application has been carefully reviewed in light of the Office Action dated March 11, 2010. Claims 1 to 8 are in the application, of which Claim 1 is the still sole independent claim. Reconsideration and further examination are respectfully requested.

The Office Action entered a rejection of all claims under 35 U.S.C. § 103(a), primarily over U.S. Patent Application Publication 2004/0240017 (Kandori) in view of U.S. Patent 5,415,978 (Asami) and U.S. Patent Application Publication 2004/0105139 (Hirose). In response, Claim 1 has been amended so as to specify that the temperature of the claimed optical deflector is controlled so as to set the temperature thereof at a predetermined temperature, by using a modulation signal of a modulated light source. Reconsideration and withdrawal of the rejections are therefore respectfully requested, as explained in greater detail below.

The claims are directed to control of an image forming apparatus, in which the temperature of an optical deflector having a movable portion is controlled based on a modulation light of a light source. Control is effected such that the temperature of the optical deflector is set at a predetermined temperature. In particular, control is effected in a unit compensation time, wherein the unit compensation time is set as half of an oscillation period including a drawing time for irradiating light and a non-drawing time for not irradiating light.

In one representative embodiment, described in connection with Figure 7, a light source control unit uses the power P_{dr} of light with which the optical deflector 10 is irradiated within a drawing time, so as to determine a current to be supplied to a heating element 60. Naturally, the scope of the claims is not limited to the representative embodiments described in the specification, which rather serve to illustrate examples of arrangements which fall within the scope of the claims.

Thus, according to the claims, the temperature of the optical deflector is controlled by using a modulation signal of the modulated light source, control is effected so as to set the temperature of the optical deflector at a predetermined temperature, and control is effected in a unit compensation time, wherein the unit compensation time is set to half an oscillation period including a drawing time for irradiating light and a non-drawing time for not irradiating light.

The art applied against the claims is not seen to disclose or to suggest an arrangement as set out in the claims. Kandori is seen to describe a MEMS scanner in which deviation of beam spots is corrected by changing a drive frequency. Kandori, however, is not seen to disclose or to suggest a configuration for controlling a temperature of its optical deflector.

Page 3 of the Office Action took the position that Kandori's Figure 5 disclosed the feature of "controlling the temperature of the optical deflector by using a modulation signal from the modulation means so as to stabilize a resonance frequency of the optical deflector". Applicants respectfully disagree with this assessment of Kandori's disclosure. As Applicants understand it, Kandori does not disclose anything concerning

the control of the temperature of its optical deflector. Indeed, page 3 of the Office Action also concedes that Kandori does not disclose a “temperature controller”. As such, the Office’s assessment of Kandori seems at odds with its own concession that Kandori does not disclose a temperature controller.

Asami was relied on as allegedly disclosing a temperature controller according to the claims, but Applicants respectfully submit that such reliance is misplaced. As Applicants understand it, Asami discloses a configuration in which a semiconductor laser and a wavelength converter are provided with a temperature controller. However, and unlike the claims herein, Asami does not disclose or suggest a configuration for controlling a temperature of an optical deflector “by using a modulation signal”, i.e., a modulation signal applied to a modulated light source.

The Office Action asserted that Figures 2 and 3 of Asami described temperature control of an optical deflector by using a modulation signal applied to a modulated light source. Applicants respectfully disagree with this assessment of Asami. As shown in Asami’s Figure 3, a resonator mirror 108 is provided with a heat sink 116 and Peltier element 118, together with a temperature sensor 124 whose output is used by drive control circuit 126 so as to drive Peltier element 118. Such a construction uses the output of temperature sensor 124 so as to effect temperature control, but such a construction does not “use a modulation signal” as set out in the claims. It should be understood that the claims herein are not necessarily directed to an arrangement in which temperature of the optical deflector is controlled based on a temperature measurement. Rather, the claims

herein are directed to an arrangement in which the temperature of the optical deflector is controlled by using the modulation signal applied to a modulated light source.

Hirose has been reviewed, but it is not seen to disclose or to suggest anything relevant to the above-noted deficiencies of Kandori and Asami. Hirose is seen to disclose the generation of a magnetic field for a MEMS scanner. However, Hirose is not seen to disclose or to suggest anything relevant to the control over temperature of his optical deflector.

It is therefore respectfully submitted that those of ordinary skill would agree with Applicants herein, to the effect that the applied art does not disclose or suggest control of temperature of an optical deflector by using a modulation signal for a modulated light source, control so as to set the temperature of the optical deflector at a predetermined temperature, and control in a unit compensation period, wherein the unit compensation period is set as half of an oscillation period including a drawing time for irradiating light and a non-drawing time for not irradiating light.

Allowance is respectfully requested.

REQUEST FOR INTERVIEW

This is a written request for a telephone interview with the Examiner, pursuant to MPEP § 713.01:

"Where the reply to a first complete action includes a request for an interview, a telephone consultation to be initiated by the examiner or a video conference, or where an out-of-town attorney under similar circumstances requests that the examiner defer taking any further action on the case until the attorney's next visit to Washington (provided such visit is not beyond the date when the Office action would normally be given), the examiner, as soon as he or she has considered the effect of the reply, should grant such request if it appears that the interview or consultation would result in expediting the case to a final action."

In view of the above remarks, Applicants submit that the entire application is in condition for allowance. However, if the Examiner does not agree, Applicants respectfully request an interview to discuss the differences between the present invention and the applied art. For his part, the undersigned will also telephone the Examiner in the following weeks in an effort to determine the status of the application, and also to schedule an interview. Accordingly, however, if the Examiner reaches this case for action before an interview has been scheduled, Applicants respectfully request that the Examiner contact the undersigned at (714) 540-8700 for scheduling of an interview.

CONCLUSION

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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